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DESERTIFICATION, SEMIARID AND LEAF AREA INDEX IN JEREMOABO'S POLE: THE MIDIATIC ASSESSMENT

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RESUMO
O texto analisa o discurso midiático sobre o processo de desertificação na Bahia, especialmente no Polo de Jeremoabo, e busca identificar a concepção de semiaridez exposta nas reportagens das emissoras baianas de televisão. Expõe ainda a leitura perpetrada a respeito dos impactos provenientes do processo de desertificação, comparando com a realidade. Tomou-se como base para reflexão os trabalhos científicos para conferir a veracidade do conteúdo das reportagens. Para a efetivação da pesquisa realizou-se a revisão bibliográfica acerca do tema central e levantamento de reportagens feitas pelas filiais regionais das emissoras de televisão, especificamente a Rede Globo, Band, Record e SBT. A leitura das entrevistas encontradas, assim como a sistematização das informações veiculadas pelas emissoras, permitiu concluir que a forma como a mídia define e caracteriza a desertificação no semiárido baiano, impõe a necessidade de releitura do discurso perpetrado, assim como, ampliação dos estudos sobre o processo de desertificação e vulnerabilidade ambiental das Áreas Susceptíveis à Desertificação (ASD).
Palavras-Chave: Desertificação; Semiárido; Polo de Jeremoabo; Leitura midiática.

ABSTRACT
The paper examines the media discourse on Bahia's desertification process, particularly the Jeremoabo Pole, in order to identify the semiaridity notion portrayed in Bahia's television reports. It also reveals the misinformation spread about the effects of desertification by contrasting it with reality.It was used as a foundation for reflecting on scientific studies in order to verify the authenticity of the reports' content. A bibliographic review of the major issue was conducted, as well as a survey of the reports produced by the regional branches of the TV networks, notably Rede Globo, Band, Record, and SBT. The analysis of the interviews found, as well as the organization of the information broadcast by the networks, led us to the conclusion that the way the media defines and characterizes desertification in Bahia's semi-arid region necessitates a rereading of the discourse, as well as the expansion of studies on the desertification process and the environmental vulnerability of the Areas Susceptible to Desertification (ASD).
Keywords: Desertification; Semiarid; Jeremoabo Pole; Midiatic assessment

INTRODUCTION

Desertification is defined by the Ministry of Environment (MMA) as a process resulting from environmental and socio-environmental degradation, particularly in arid and semi-arid regions, and occurs due to climatic factors as well as anthropic action. In Brazil the Area Susceptible to Desertification (ASD) comprises the nine states of the Northeast Region, part of Minas Gerais and Espírito Santo, whose residents amount to 85% of the population considered poor in the country (MMA, 2018).

The Area Susceptible to Desertification (ASD) produces spaces vulnerable to socio-spatial inequalities since those who cannot survive in such spaces tend to seek better living conditions in other regions. According to sources from the Brazilian Institute of Geography and Statistics (IBGE), more than 50 million Brazilians were below the poverty line in 2010, and about 43% of this total live in the Northeast, which identifies, from the socio-economic point of view, the region as the poorest in Brazil. From this perspective, it is necessary to analyze the socio-environmental issues in the Northeast regarding the desertification process, because this space goes through socio-environmental and socio-economic problems. In the meantime, the political elites from the traditional/conservative base claim that those derive entirely from climatic factors, which contributes to soil degradation and consequently interferes with productivity, thus leading to low food production, et cetera. (CASTRO, 2008). Taking this as truth, the political elites then create proposals based on combating drought, however, "no solution or set of solutions aimed at solving the problems of the Brazilian Northeast can abstract the behavior of its environment" (AB'SÁBER, 1999, p. 2). The author's view indicates that one should not naturalize a problem because, beyond the natural issue, there is human intervention.

Thus, it is fundamentally necessary to elaborate an analysis of the desertification process in the Jeremoabo Pole, given the need to expose the **leaf area index** situation, observing media discourse on the issue. Furthermore, it is also important to identify how media portrays the desertification process in Bahia, specifically in the areas bound towards investigation hosting municipalities located in spots of environmental susceptibility and vulnerability.

Therefore it is proposed to explain this reality, abiding by the definitions elaborated by media about the desertification process, identifying what is attributed to it. In addition, it is also proposed to verify the information contained in the leaf area index map of the study location and associate it with the intensification of desertification in the period between 2001 and 2014. Thus, we seek to analyze the definition and characterization of the desertification process in the Jeremoabo Pole, as well as explain the conception of semiaridity, from the discourse elaborated by the media.

The conception of semiaridity, elaborated to characterize the Jeremoabo Pole, was identified from the articles broadcasted by the Bahia Television Broadcasters: Rede Bahia, TV Aratu, TV Record TV Itapoan, and TV Bandeirantes Bahia.

This research aligns with the proposal of the major project entitled "Discrimination and Phenological Characterization of the Leaf Area Index from Modis Sensor Time Series in the Desertification Pole of Jeremoabo Ba". The general objective of said project is to use time series of remote sensing data from the Jeremoabo desertification pole, from the period 2001 to 2014, to map land use and land cover classes, as well as to characterize the phenology of such classes through phenological metrics derived from EVI time series from Terra Modis platform.

METHODOLOGY

The methodological procedures defined for this work included a bibliographic review on the central theme and a survey of reports made by the regional branches of the following television stations: Rede Globo de Televisão, Rede Bandeirantes de Televisão, Rede Record de Televisão, and Sistema Brasileiro de Televisão. The interviews found were read, as well as the systematization of the information broadcast by the networks.

After the bibliographic review, a survey of the reports made by the television stations designated for the research began. In order to access these reports, several queries were conducted on each station website, each one aiming to meet the expectation of answering the main objective, that is, to analyze the definition and characterization of the desertification process in the Jeremoabo Pole, as well as to explain the conception of semiaridity, from the discourse elaborated by the media.

During the investigation, it was discovered that just one report connected to the desertification process in the Jeremoabo Pole specifically, thus all interviews in the state of Bahia whose core topic was desertification were gathered in order to keep the research objective.

The survey of information broadcasted by the newspapers of Bahia's Television Broadcasters, Rede Bahia, TV Aratu, Record TV, TV Itapoan, and TV Bandeirantes Bahia, was conducted for the range of 2001 to 2014, with the goal of identifying the discourse published by the media, particularly in newspapers of the referred Broadcasters. However, due to a lack of data, the time stamp was prolonged until 2019, aiming to find a larger number of reports and to increase the study's consistency.

The goal of the mapping was to identify, delimit, and characterize the study region, allowing for the organization of information concerning the communities of the Jeremoabo Pole. The data was presented in a Word table for the maps, with the goal of better understanding the desertification process in the semi-arid region. The vectorial data was then processed using the geoprocessing software ArcView 3.3, which had been retrieved from the SIG-BAHIA database.

Starting with the database of the Brazilian Institute of Geography and Statistics, we systematized the geographic references of the municipalities referenced in the articles (IBGE-2017). For finalization and layout, the ArcMap program (ArcGis 10.5) and Corel Draw X4 were utilized. The viewpoints of the respondents were assessed based on the reading of the reports, and they were compared to the speech of theorists who debate the subject. Finally, a database was developed with the intent of creating a synthesis on the media understanding of Bahia's desertification process in order to support the academics of the Research Group on Nature, Society, and Spatial Planning (GEONAT).

RESULTS AND DISCUSSIONS

The research focuses on desertification in the semi-arid region and the assessment of the extent of natural vegetation. The media reading, i.e., the stories broadcast by Bahia's television stations are used as a reference, elaborating on how the problem is addressed. One of the stages of the research was the development of a database with information gathered during the investigative process into desertification in Bahia, particularly the Jeremoabo Pole. Table 1 summarizes the information, including the date of the broadcast, the Bahia television station, the topic of the item, and how they address the desertification theme.

Table 1 - DESERTIFICATION, SEMIARID AND VEGETABLE COVERAGE IN THE JEREMOABO POLE: THE MIDIATRIC READING BETWEEN 2001 AND 2019

DATE	RESPONSIBLE FOR THE PRODUCTION OF THE REPORTAGE	TV NETWORK	SUBJECT HEADING	DESERTIFICATION APPROACH
29/04/2019	Geogirna Matnart	Rede Globo	Caatinga Series: More than 200 cities in Brazil are on a desertification risk map	The paper focuses on the causes of desertification, its repercussions, and the real situation in Bahia. When interviewed, biologist Luis Cesar Pereira reveals a more technical perspective on the topic at hand. The phenomena is best described in the municipalities of Irecê and Xique Xique in the report.
19/08/2019	Filipe Domingues	Rede Globo	Desertification threatens caatinga areas and may be irreversible	It is the only report that mentions Jeremoabo Hub municipalities, particularly Canudos and Uauá. The reporters Felipe Domingues and Celso Tavares are on the lookout for causes and effects of desertification in the aforementioned communities, with a particular focus on the human impact generated by cattle raising. Luiz Cesar Pereira, the coordinator of CEMAFAUNA, was the lone specialist who took part. The reporters give a quick description of the ***recaatigamento*** project at the end of the reportage.

12/02/ 2017	Kedma Ferr	Rede Globo	Find out what is being done to combat desertification	In an interview, the report is summarized. It does not describe what is being done in Bahia to address desertification, but it does define desertification and its causes. Because of its technical-scientific thoroughness, this interview distinguishes out among the others. It was totally done with Ailton Rocha, the Secretary of the Environment's Superintendent of Water Resources.
26/05/2 012	Ligia Feliciano	Rede Globo	Desertification - in full	Report from the series Caatinga. Here the causes and consequences of desertification are explained. The report exposes the effects of economic desertification
20/07/2 013	Ligia Feliciano	Rede Globo	Brazilian Sertão suffers from the desertification process	The report is set in Curaçá, Bahia, and is based on research findings from the Brazilian Agricultural Research Corporation (EMBRAPA), particularly Ledo Bezerra Sá's investigations. It describes the ways that local small farmers adopt to limit corrosion to the soil and delay the progression of desertification, in addition to addressing the causes and effects of desertification.

Source: SAMPAIO, 2019

The findings summarized in table 1 discussed many aspects of the desertification process, as well as the necessity for residents in affected areas to counteract it. One factor to consider is that the Globo Network affiliate's definition of desertification is the same as that used by the Ministry of Environment (MMA), which states that "desertification is one of the most serious processes of soil degradation, in which the land loses almost all of its nutrients, and desertification only occurs in the arid, semi-arid, and sub-humid-dry regions of the planet" (MATNART, 2019). "Desertification mainly happens in arid, semi-arid, or sub-humid environments, and is enhanced by human action," it continues (FERR,

Agricultural Station, 2017). The definition indicates that "desertification occurs in arid, semiarid, and dry subhumid regions" (FELICIANO, 2012).

The papers' consensus on the presence of desertification emphasizes that the process occurs in dry areas, transforming them into deserts. However, the definition of drought, as described in this literature, is not given, and it relates to an intermittent situation of water scarcity. However, it was noted that in these publications, more emphasis was placed on suggestions for coping with drought in the media discourse, despite the fact that drought is a natural event that cannot be avoided. The discourse of drought as an intrinsic and distinctive problem of the semi-arid northeastern region was also transformed, and the difficulty of water access was emphasized (FELICIANO, 2013), as a criticism of the modest number of government projects to promote water availability.

Per the reports, the desert is defined as a result of the desertification process, whereas the "caatinga, the world's unique environment, which spans more than half of Bahia's land, runs the risk, trust me! Of becoming desert" (DOMINGUES, Globo Natureza, 2019). However, the concept of desert is not presented, which is a region with an arid climate in which evaporation levels exceed precipitation, when the latter is rare and unstable, resulting in a water deficit, while the vegetation is sparse and highly adapted to the local climate characteristics, with little resistance to wind action, making wind erosion recurrent, and the soils are shallow and saline. Aside from that, deserts have generally been low-population areas (CONTI, 2008).The news broadcast by the examined Bahia radio stations provide some vital information for understanding the notion of desertification, but there is no explanation for the information that is reproduced, resulting in a lack of overall awareness of the Bahia desertification landscape.

During the investigation, it was noticed that one topic, the concept of semiarid, was not addressed with greater rigor, despite the reports demonstrating diverse socio-environmental, meteorological, and pedological features of the Brazilian semiarid. They also fail to explain the distinction between semi-arid region and semi-arid climate, as well as the climatic diversity in this region; they treat the semi-arid as if it were a static and uniform condition everywhere, making it difficult to comprehend the progression of desertification in Brazil, particularly in the semi-arid region.

Anthropic action and desertification in the semi-arid region

The point at which all of the investigations showed a greater consensus of perspectives related to the cause of desertification: human activity. "The damage of the caatinga is impacted by man as deforestation, burning, and exploitation of firewood," they all said, citing human activity as the primary cause of environmental deterioration (MATNART, 2019).

The following speeches about desertification in the state of Bahia, notably regarding the Jeremoabo Pole, stand out in the reports found between 2001 and 2019, on Bahia's television stations:

> We are in Canudos in Bahia and this is a desertified area. It was destroyed to make room for a pasture, which was then used to feed the animals, and when it rains the water takes away everything that is on the land, there is practically nothing left and it stays like this... several of these areas that we saw here - Canudos for example - were desertified from

> the management of these areas mainly for the production of pasture. Burning the caatinga, the cacti, the bromeliads to serve as food for the animals, especially for the cattle, favors the land to be unprotected and the rainwater that is strong drags all the land down and creates these deserts.(DOMINGUES, 2019).

> Desertification is a continuous and permanent process of environmental degradation. It usually occurs in arid or semi-arid regions and is intensified by human action such as deforestation, overgrazing and excessive extraction of groundwater, which ends up causing the soil to become too dry, to the point where it has difficulties supplying the flora with nutrients so that it can develop, starting then a desertification process. (FERR, 2017).

> [Desertification] can be caused by direct human action, with land use for cultivation and grazing without proper conservation techniques and uncontrolled deforestation. This increases soil erosion, reduces rainfall and moisture retention, contributing to turning productive areas into deserts. Many native species are lost and the rural population migrates to urban centers (FELICIANO, 2012).

> The semi-arid region is increasingly threatened by the desertification process, because of these inconsequent deforestations, which remove the soil cover. The cover is very important to prevent and to ensure the quality of the soil, so the rain, it is amortized by the vegetation. When there is no vegetation, this rain causes the process that we call the erosive process; erosion is exactly these layers of soil that are being lost over time. (FELICIANO, 2013).

Several people have been cited as being responsible for the human-caused desertification process. Because cattle-raising is conducted extensively in the Jeremoabo Pole, as well as in several other locations of the Brazilian semiarid, the most repeated topic in the reports is environmental deterioration as a practical consequence of cattle-raising. The most significant human activity that contributes to desertification is land preparation, whether for cattle or crops, i.e., burning. This method of preparation has been employed in Brazil for centuries and is believed to be damaging to the land because it involves clearing and burning natural flora. This approach destroys the soil since it is exposed to exogenous forces such as rain and wind in addition to the destructive effects of fire. Knowing that vegetation protects the soil and mitigates the effects of precipitation and wind, deforestation and fires leave the bare soil vulnerable to leaching, as well as laminar and wind erosion (LOBO AND SILVA, 2012).

Aside from the type of soil preparation, widespread cattle-raising contributes to desertification through soil trampling and overgrazing, a phenomenon that occurs when plants are subjected to intensive grazing for lengthy periods of time or when there is insufficient time for soil recovery. Compaction from herd trampling destroys porosity,

making the soil solid and devoid of oxygen, obstructing or blocking precipitation penetration, and hence increases desertification. According to Oliveira Junior (2014), overgrazing is defined as excessive grazing for a long period of time in a specific location where the vegetation has previously been weakened. The harm caused by goat cattle overgrazing in the semi-arid region of Bahia was highlighted in an interview given by Felipe Domingues for Globo Natureza in 2019. "It makes the vegetation thinner," the reporter said, "the new plants that appear are eaten, and there is no renewal of the caatinga, and that old plant that dies has no successor." The semi-arid region's vegetation is characterized by delayed, autonomous rebound, thus constant predation causes it to vanish.

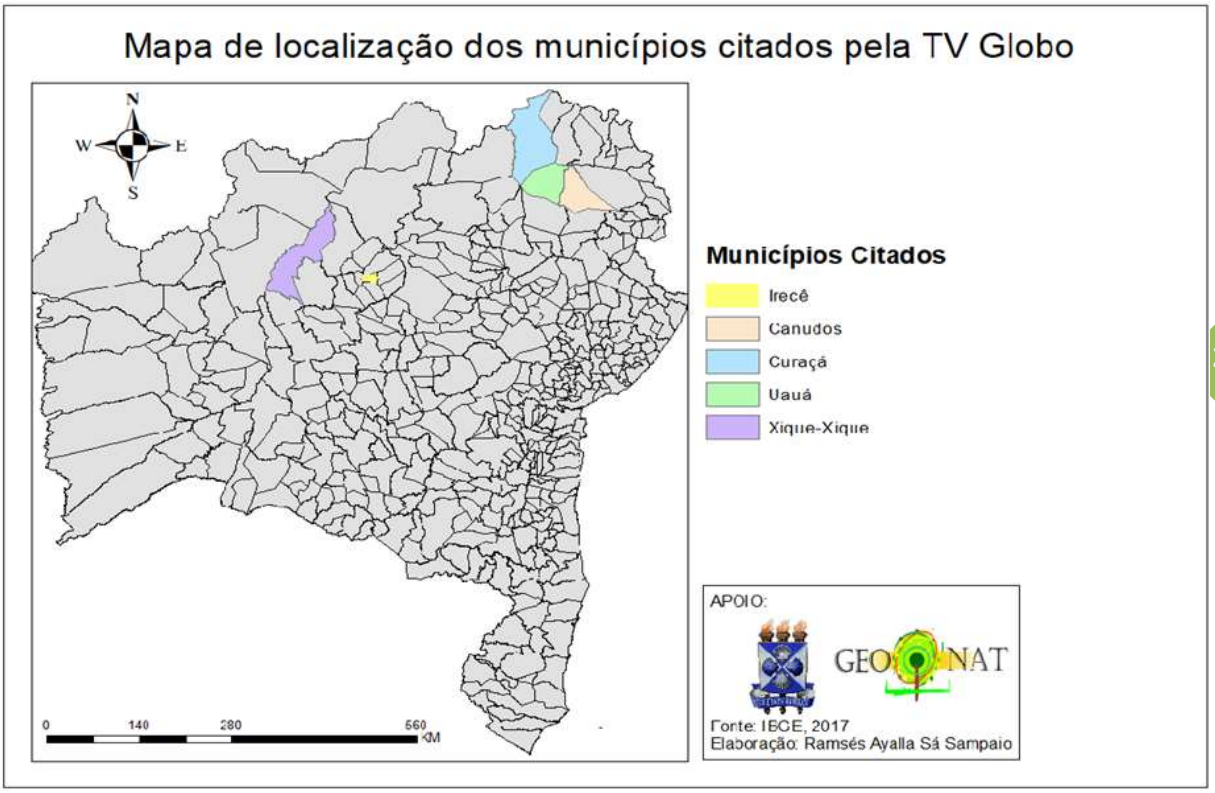
All reports address damage caused by livestock activity. However, little is known about those who are the product of agricultural activity. Only one of the reports, an interview with the Superintendent of Water Resources of the Secretariat of the Environment, Mr. Ailton Rocha, conducted in 2017, reveals this issue. "The Brazilian agricultural exploitation paradigm is incorrect, because enormous emphasis is placed to monoculture, whereas polyculture is ignored," he said when asked how human behavior is linked to the desertification process. “Then we embark on a never-ending process of extracting mineral richness from the earth with no replacement." Furthermore, one sees the lack of identification of who is responsible for environmental deterioration, when only one report, Felipe Domingues' report in Globo Natureza in 2019, identifies a possible group to be held responsible.

Desertification poses a threat to caatinga areas, and if governmental policies aimed at mitigating the consequences of drought are not established, it may become permanent. During the research, it was discovered that the rhetoric printed in the reports published by the Bahia broadcasting stations consulted assigns blame for the desertification process caused by soil degradation to goat farmers, who are typically small entrepreneurs with limited technical resources and no government support. However, the extensive cattle-raising practiced by large landowners, cattle-breeders who allocate and prepare large plots of land using slash-and-burn techniques, i.e. those who commonly practice monoculture and use subterranean waters for soil irrigation, were not cited as an example in the reports consulted for this research.

Areas susceptible to desertification

Given the importance of television stations as the information vehicle with the broadest coverage and insertion in Brazilian households, the content of the news offered does not reflect the gravity of the desertification process in the state of Bahia. As a result, it was predicted that the theme would be revisited more frequently.

Each report identifies municipalities and states with desertification-prone areas; however, due to the small number of reports, it is possible that not all of the affected areas were identified, resulting in a discrepancy between the areas designated as susceptible to desertification by the Ministry of Environment and those highlighted by the reports. In a study conducted by GEONAT, more than 200 (two hundred) municipalities in Bahia were identified as vulnerable; nevertheless, it was discovered in this study that the Rede Globo de Televisão only mentions the five municipalities mentioned in MAP 1.



MAP 1 - Municipalities in bahia that, according to the globo tv network, qualify as areas in the process of desertification

The lack of studies on desertification and vulnerable areas in Bahia obstructs environmental consciousness, because a society without the materials to produce an assessment of the problem is unable to comprehend how terrible the phenomenon is. Another factor to consider is that, even back then, publications about desertification in Bahia lacked the technical-scientific rigor required to comprehend all facets of the situation.

CONCLUDING REMARKS

The goal of the study was to identify media discourse about the desertification process in Bahia, particularly around the Jeremoabo Pole, as well as to identify the concept of semiaridity described in Bahia's television reports, and to expose the discourse perpetrated in them about the effects of the desertification process by comparing discourse with reality.

To check the accuracy of the reports, scientific research were employed as a basis for reflection.

As a result, it was found that the number of reports supplied was insufficient for understanding the problem and did not involve multiple aspects to effectively notify the public about the dangers of desertification. It was also obvious that the reports did not pay much attention to the technical-scientific rigor required to disclose the damage caused by desertification, nor did they attempt to clarify the definition and idea of semiaridity, leaving the concept and comprehension of DSAs for society unclear and inadequate.

The broadcasters that produced the stories also promoted society's dominant concept that environmental deterioration is the responsibility of small producers, as well as soil management and use when tending crops and cattle. Nonetheless, they spared the vast landowner community from any liability because they are not named in any of the reports as directly responsible for environmental damage.

In light of these considerations, we conclude that the media's portrayal of desertification in the semi-arid region warrants a rereading of the discourse and the expansion of studies on the desertification process and the environmental vulnerability of the Areas Susceptible to Desertification (ASD).

REFERENCES

AB'SÁBER, Aziz Nacib. **Dossiê Nordeste Seco**. USP, São Paulo. 1999.

AB'SABER, Aziz Nacib. **Problemática da Desertificação e da Savanização no Brasil Intertropical**. Revista USP, São Paulo, 1977.

ANDRADE, Manuel Correia de. **A Terra e o Homem no Nordeste**. 1 Ed. São Paulo: Brasiliense, 1963

BRASIL. **Programa de Ação Nacional de Combate à Desertificação e Mitigação dos Efeitos da Seca PAN-Brasil**. Ministério do Meio Ambiente, 2009

CONTI: José Bueno. **O conceito de desertificação**. Climatologia e Estudo da Paisagem. Rio Claro. Vol 3. Nº 2 Julho/dezembro de 2008.

IBGE, Instituto Brasileiro de Geografia e Estatística. **Censo Demográfico**, 2010.

DOMINGUES, Filipe. **Desertificação ameaça áreas de caatinga e pode ser irreversível**. Canudos: Globo Natureza, 2019. (10 min.), P&B. Disponível em: https://g1.globo.com/nature-za/desafionatureza/noticia/2019/08/20/desertificacao-atinge-13percent-do-semiarido-bra-si-lei-ro-e-ameaca-conservacao-da-caa-tin-ga.ghtml. Acesso em: 19 ago. 2019.

EMBRAPA. **Bioma Cerrado,** 12 ago. 2020. Disponível em: https://www.embrapa.br/cerra-dos/co-le-cao-en-to-mo-lo-gi-ca/ bioma-cerrado. Acesso em: 19 ago. 2020.

FELICIANO, Ligia. **Desertificação – íntegra**. Globo Ecologia, 26 de mai. de 2012. Disponível em:http://re-de-glo-bo.glo-bo.com/glo-bo-cidadania/videos/v/desertificacao integra/2245708/. Acesso 05 de out. de 2012.

FELICIANO, Ligia. **Sertão brasileiro sofre com o processo de desertificação**. GSHOW, Curaçá, Globo Ecologia 2013. Disponível em: http://redeglobo.globo.com/glo-bocidadania/videos/v/sertao-brasileiro-sofre-com-o-processo-de-desertificacao. Acesso 05 de out. de 2019.

FERR, Kedma. **Saiba o que está sendo feito para combater a desertificação**. Estação Agrícola, 2017. (9 min.), P&B. Disponível em: https://globoplay.globo.com/v/5644100/. Acesso em: 10 out. 2019.

LOBÃO, J. S. B.; SILVA, B. C. N. **Análise socioambiental na região semiárida da Bahia**: geoprocessamento como subsídio ao ordenamento territorial. Feira de Santana: UEFS Editora, 2013.

MATNART, Geogirna**.** Série Caatinga: Mais de 200 cidades do Brasil estão em mapa de risco de desertificação**. Irecê, BATV, 2019.** (3 min.), P&B. Disponível em: https://globoplay.globo.com/v/4144507/. Acesso em: 05 out. 2019**.**

MMA, Ministério do Meio Ambiente. **O que é desertificação**? Disponível em: https://www.mma.gov.br/perguntasfrequentes.html Acesso em: 15 de março de 2019.

OLIVEIRA JUNIOR, I. **O processo de desertificação:** a vulnerabilidade e a degradação ambiental no polo regional de Jeremoabo-Bahia. Dissertação (Mestrado em Geografia) – Programa de Pós-Graduação em Geografia, Universidade Federal da Bahia, Instituto de Geociências, Salvador, 2014.

SANTANA, Marcos Oliveira. (Org.). **Atlas das áreas susceptíveis à desertificação do Brasil**. Secretaria de Recursos Hídricos, Universidade Federal da Paraíba: Brasília, 2007.

VALE, Raquel de Matos Cardoso do. **Degradação ambiental e processos de desertificação no Estado da Bahia**. UEFS, Feira de Santana, 2009.